

BTEC Assignment Brief

Qualification	Pearson BTEC International Level 3 Subsidiary Diploma in Engineering Pearson BTEC International Level 3 Foundation Diploma in Engineering Pearson BTEC International Level 3 Diploma in Engineering Pearson BTEC International Level 3 Diploma in Mechanical Engineering Pearson BTEC International Level 3 Diploma in Digital Engineering Pearson BTEC International Level 3 Diploma in Manufacturing Engineering Pearson BTEC International Level 3 Diploma in Aeronautical Engineering Pearson BTEC International Level 3 Extended Diploma in Engineering Pearson BTEC International Level 3 Extended Diploma in Mechanical Engineering Pearson BTEC International Level 3 Extended Diploma in Digital Engineering Pearson BTEC International Level 3 Extended Diploma in Manufacturing Engineering Pearson BTEC International Level 3 Extended Diploma in Aeronautical Engineering
Unit number and title	Unit 11: Engineering Maintenance and Condition Monitoring Techniques
Learning aim(s)	B: Examine the use of condition monitoring techniques to detect faults and potential failures before they occur
Assignment title	Condition Monitoring
Assessor	
Issue date	
Hand in deadline	
Vocational Scenario or Context	You are working as a trainee maintenance technician for an engineering organisation that manufactures a range of household appliances using both manual and CNC machinery. Your job includes maintaining a range of different pieces of machinery. Your supervisor is pleased with your understanding of types of maintenance and the reasons for carrying out maintenance. Your supervisor has now asked you to investigate how condition monitoring is used to detect faults and potential failures in engineering machinery.



Task 1	You are going to investigate the use of condition monitoring for engineering plant or equipment, and using information provided you are going to identify causes of faults, the potential failures and make recommendations for interventions that could rectify the faults and failures. To do this: You need to research the different conditioning monitoring techniques used in engineering, along with the equipment that is used and how data is collected. You also need to research the common causes of faults and failure in engineering plant and equipment, the calculations that can be carried out and the factors that could contribute to faults and failure. You should use this research to produce a report that includes information about each of the conditioning monitoring techniques that can be used for engineering plant and equipment, the equipment that is used for each technique and how data is collected. The techniques covered should include vibration, temperature, flow, thickness, oil and emissions analysis along with crack and corrosion detection. You then need to: Produce a report that evaluates the use of condition monitoring for engineering plant and equipment, including information about different condition monitoring techniques, the equipment and data used for condition monitoring and the causes of faults and failure. Your report must include: ● An analysis of the different types of condition monitoring techniques and equipment, the parameters they measure and the faults and failures they can identify and predict faults and failure in engineering plant and equipment, using examples to support your analysis. ● An analysis of the faults and failures that are associated with engineering plant and equipment, including failure rate, failure mode and functional failure and the factors that may contribute to faults and failure. ● A detailed analysis and evaluation of the results from a given condition monitoring exercise. You need to identify the item, the parameters that have been measured and the techniques and equipment used. You also need to identify factors that may contribute to a fault or potential failure, and recommend appropriate interventions to rectify the fault(s) and/or failure(s).
Checklist of evidence required	A report focusing on condition monitoring techniques and an analysis of given monitoring data to identify potential faults and failure.
Criteria covered by this task:	



Unit/Criteria reference	To achieve the criteria you must show that you are able to:
11/B.D2	Evaluate the condition monitoring practice for a piece of plant or equipment and the results from a given condition monitoring exercise on a piece of plant or equipment, recommending appropriate interventions to rectify the faults and failures
11/B.M2	Analyse the condition monitoring techniques and equipment used to detect potential faults and failures in a piece of plant or equipment, including the contributory factors
11/B.M3	Analyse the results from a given condition monitoring exercise on a piece of plant or equipment, identifying realistic causes for the faults or failures.
11/B.P2	Explain the different condition monitoring techniques and equipment used to detect faults and potential failures.
11/B.P3	Interpret the results from a given condition monitoring exercise on a piece of plant or equipment identifying the possible causes.
Sources of information to support you with this Assignment	Books Mobley R Keith – Maintenance Engineering Handbook, 8th edition (McGrawHill Professional, 2014) ISBN 9780071826617. Richardson D – Plant Equipment and Maintenance Engineering Handbook (McGraw-Hill Professional, 2013) ISBN 9780071809894. Levitt J – The Handbook of Maintenance Management, 2nd edition (Industrial Press, Inc., 2010) ISBN 9780831133894 Websites iso.org/iso-45001-occupational-health-and-safety.html hse.gov.uk sciencedirect.com lifetime-reliability.com maintenanceonline.co.uk plantengineering.com Above are some examples of websites. Further useful resources may be found at qualifications.pearson.com/en/support/published-resources.html#step1



Other assessment materials attached to this Assignment Brief	Results from a condition monitoring exercise on a piece of engineering plant or equipment.
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